

## Claims

1. In an independent automated semiconductor specimen fabrication station that includes processing components which perform programmed fabrication processing operations on a semiconductor specimen in a protected environment and is constructed to 5 interface with ancillary equipment coupled to the fabrication station within an allowable spatial envelope specified by industry standards, one of the processing components including a specimen handling device for transporting semiconductor specimens to and from processing components of the fabrication station, a method of integrating onto the fabrication station a process diagnostic tool to allow it to perform on the semiconductor 10 specimen a processing operation that otherwise would not be performed by the processing components to thereby make the fabrication station more efficient and flexible to use, comprising:

positioning the process diagnostic tool in registration within the allowable spatial 15 envelope of the fabrication station to effect an interface in compliance with the specified industry standards;

causing the specimen handling device to provide to the process diagnostic tool a specimen device previously presented to the fabrication station for processing but not 20 undergoing a current operation performed by the processing components of the fabrication station; and

coordinating control of process operations performed by the fabrication station and the process diagnostic tool so that they perform separate process operations on 25 different semiconductor specimens previously presented to the fabrication station for processing.

2. The method of claim 1, in which the process diagnostic tool includes a specimen parameter measurement system or a specimen inspection system.

3. The method of claim 1, in which the industry standard specifying the allowable spatial envelope is a front-opening interface mechanical standard (FIMS) and in which the fabrication station includes a FIMS load port having kinematic mounts arranged to receive a front-opening unified pod (FOUP).

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4. The method of claim 3, in which the process diagnostic tool is configured to mount on the FIMS load port and fits within the allowable spatial envelope.

5. The method of claim 1, in which the specimen handling device is mounted for  
10 translational movement to deliver the specimen to or remove the specimen from the process diagnostic tool in a manner that does not interrupt in-progress operation of the processing components of the fabrication station.

6. The method of claim 1, in which a processor located external to the fabrication  
15 station receives and processes data acquired by the process diagnostic tool during its operation.

7. An apparatus for manufacturing a semiconductor device, comprising:

20 a) a semiconductor fabrication tool, for processing or measuring or measuring semiconductor wafers; and,  
b) a pod, interfaced to said tool at a load port, wherein said pod includes a mechanism for inspecting or measuring said wafers.

8. A method of making a semiconductor device, comprising:

25 a) inspecting a semiconductor wafer in a pod, wherein said pod is coupled to a semiconductor fabrication tool; and  
b) processing said wafer in said tool.

9. A pod for loading wafers into a process tool, comprising:
- a) an interface coupling said pod to said tool;
  - b) a mechanism for inspecting said wafers;
  - c) connections to said pod to provide power to said pod, to command said pod, and to transfer inspection data from said pod.

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10 10. A computer-controlled system for collecting and processing semiconductor inspection data, comprising:

- a) at least one pod, wherein said pod includes an apparatus for inspecting a semiconductor wafer;
- b) a memory for storing data derived from inspecting said wafer;
- c) a processor, coupled to said memory, for processing said data; and
- d) a connection to said pod, said processor and said memory for transferring said data from said pod.

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10 11. A method of monitoring the functionality of a plurality of semiconductor process tools, comprising:

- a) connecting a pod to a first one of said process tools, said pod being configured to inspect semiconductor wafers;
- b) using said pod, inspecting wafers processed by said tool;
- c) disconnecting said pod from said first tool, and connecting said pod to a different one of said tools; and
- d) connecting a second pod to said first tool, wherein said second pod is not configured to inspect semiconductor wafers.

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20 12. The method of claim 8, wherein said pod is compatible with a FOUN.

13. The method of claim 8, wherein said pod is coupled to said tool through a load port and a kinematic mount.

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